

two month extension of time and check is enclosed herewith for an extension to September 21, 2004. Applicants respectfully submit that this Response is therefore considered timely filed.

### **AMENDMENTS**

#### **In the Claims**

Please amend the pending claims as follows:

**PENDING CLAIMS AND STATUS THEREOF**

Claims 1-3 (previously canceled)

4. (previously presented): A liquid crystal display device as in claim 19 wherein the reflective surface of said second substrate comprises a plurality of reflective pixel electrodes disposed on said second substrate.

5. (previously presented): A liquid crystal display device as in claim 4 wherein said second substrate comprises an integrated circuit.

6. (previously presented): A liquid crystal display device as in claim 19 wherein said first substrate comprises a transparent electrode.

Claim 7 (previously canceled)

8. (previously presented): A liquid crystal display device as in claim 20 wherein said polarizer is a polarizing beamsplitter.

9. (previously presented): A liquid crystal display device as in claim 20, wherein said light source is a field sequential light source which separately provides a plurality of different colored light over time which correspond to separate color fields.

10. (previously presented): A liquid crystal display device as in claim 9 wherein said light source comprises three differently colored LEDs (light emitting diodes) which are sequentially and separately turned on.

11. (previously presented): A liquid crystal display device as in claim 19 further comprising at least one lens positioned to receive the reflected light.

12. (previously presented): A liquid crystal display device as in claim 11 wherein said liquid crystal display device is housed within a head mounted display.

13. (previously presented): A liquid crystal display device as in claim 9 wherein each separate color field of said separate color fields lasts for no longer than about 8 milliseconds.

Claims 14-17 (previously canceled).

18. (previously presented): A liquid crystal display device as in claim 19 wherein integral multiples of 90 degrees are added to or subtracted from the polarization input angle  $\beta$ .

19. **(currently amended)**: A liquid crystal display device, comprising:

a first substrate that is substantially transparent;

a second substrate having a substantially reflective surface, said second substrate being substantially parallel with said first substrate and at a distance  $d$  from said first substrate;

a liquid crystal fluid having a birefringence ( $\Delta n$ ), said liquid crystal fluid located between said first and second substrates, whereby said liquid crystal fluid has a thickness of approximately the distance  $d$ , wherein the product of the birefringence and the distance ( $\Delta n d$ ) is selected from about  $0.1\mu\text{m}$  to ~~about  $0.2\mu\text{m}$~~  less than  $0.18\mu\text{m}$ ;

said first substrate having a first liquid crystal alignment layer proximate to said liquid crystal fluid, said first liquid crystal alignment layer having a first orientation direction;

said second substrate having a second liquid crystal alignment layer proximate to said liquid crystal fluid, said second liquid crystal alignment layer having a second orientation direction, wherein the first and second orientation directions are selected for a twist angle ( $\phi$ ) of said liquid crystal fluid of from about 70 degrees to about 90 degrees;

wherein substantially linear polarized light is incident to said first substrate, the linear polarized axis of the incident light is at a polarization input angle  $\beta$ , wherein the polarization input angle  $\beta$  is selected from about minus 13 degrees to about plus 13 degrees of said first orientation direction;

wherein the polarization of the incident linear polarized light changes as it goes through said liquid crystal fluid and is elliptically polarized at said second substrate and has a first ellipticity, whereby the elliptically polarized light is reflected back by said second substrate reflective surface to said first substrate, and whereby the reflected light is elliptically polarized at said first substrate and has a second ellipticity.

20. (previously presented): A liquid crystal display device as in claim 19, wherein a polarizer is positioned between a light source and said first substrate, said polarizer receives light from the light source and linear polarizes the light to said first substrate, wherein said polarizer axis is substantially aligned with the polarization input angle  $\beta$ .

21. (previously presented): A liquid crystal display device as in claim 19, wherein shades of gray are produced by varying an electric field between said first and second substrates from substantially no electric field to an electric field having an optimum value.

22. (previously presented): A liquid crystal display device as in claim 19, wherein the distance  $d$  is about 1.3 micrometers.

23. **(currently amended):** A method for manufacturing a liquid crystal display device, said method comprising the steps of:

providing a first substrate that is substantially transparent;

providing a second substrate having a substantially reflective surface, substantially parallel with said first substrate, and at a distance  $d$  from said first substrate;

locating a liquid crystal fluid between said first and second substrates, said liquid crystal fluid having a birefringence ( $\Delta n$ ) and a thickness of approximately the distance  $d$ , wherein the product of the birefringence and the distance ( $\Delta n d$ ) is from about  $0.1\mu\text{m}$  to ~~about  $0.2\mu\text{m}$~~  less than  $0.18\mu\text{m}$ ;

providing a first liquid crystal alignment layer on said first substrate proximate to said liquid crystal fluid, said first liquid crystal alignment layer having a first orientation direction;

providing a second liquid crystal alignment layer on said second substrate proximate to said liquid crystal fluid, said second liquid crystal alignment layer having a second orientation direction, wherein the first and second orientation directions are selected for a twist angle ( $\phi$ ) of said liquid crystal fluid of from about 70 degrees to about 90 degrees;

providing substantially linear polarized light incident to said first substrate, the linear polarized axis of the incident light being at a polarization input angle  $\beta$ , wherein the polarization input angle  $\beta$  is selected from about minus 13 degrees to about plus 13 degrees of said first orientation direction;

wherein the polarization of the incident linear polarized light changes as it goes through said liquid crystal fluid and is elliptically polarized at said second substrate and

has a first ellipticity, whereby the elliptically polarized light is reflected back by said second substrate reflective surface to said first substrate, and whereby the reflected light is elliptically polarized at said first substrate and has a second ellipticity.

24. (previously presented): A method as in claim 23, further providing the step of positioning a polarizer between a light source and said first substrate, said polarizer receives light from the light source and linear polarizes the light to said first substrate, wherein said polarizer axis is substantially aligned with the polarization input angle  $\beta$ .

25. (previously presented): A method as in claim 23, further comprising the step of producing shades of gray by varying an electric field between said first and second substrates from substantially no electric field to an electric field having an optimum value.